Children's understanding of mental states and causes of emotion

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Use of Trait Information in the Attribution of Intentions by Popular, Average and Rejected Children

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This study aimed to examine the extent to which children's sociometric status is related to the use of trait information. Therefore, 99 children (aged 4–6) were asked to make inferences about protagonists' future actions when positive or negative trait information was given. Results showed that rejected children were less affected by the protagonist's trait information than their more popular peers (average and popular) in both conditions. As well as their frequently reported hostile bias, rejected children also showed a positive bias. This suggests a general delay in social reasoning among rejected children, but can also be explained by a difference in their development of social cognition based on their atypical daily interactions. Copyright © 2004 John Wiley & Sons, Ltd.

Key words: peer rejection; trait information; attribution of intentions

INTRODUCTION

Sociometric status within the peer group seems a valid indicator of social competence (Denham, 1998). Rejected children can be found to spend more time alone and also report more loneliness; they have fewer friends, show more solitary play, and spend more time being unoccupied, such as aimlessly wandering around or watching other children play (Asher and Wheeler, 1985; Attilli *et al*., 1997; Coie *et al*., 1990; Gest *et al*., 2001). In contrast, popular children engage more in social conversations with peers, show more empathy, and participate more in pro-social activities such as co-operative play and in-group games (Ladd *et al*., 1990). Behaviour in social interactions largely depends on a personal interpretation of the situation. When you are excluded from play the

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motives that you attribute to your opponents. Do they dislike you or is it simply the fact that they cannot include another player in this particular game, but they will let you join them the next time?

Different interpretations are likely to elicit different reaction patterns. However, not all the relevant information is available to unequivocally decide which interpretation is the correct one in most situations. Trait information, e.g. hearing that 'Jeff is a nice boy', could be helpful to infer Jeff's thoughts and feelings towards a particular situation and anticipate his actions. Yet, trait information is only generalized information and therefore never decisive. Jeff could be in a bad mood today, or even a 'generally nice' boy like Jeff might not like you. Personal characteristics and previous experiences (not necessarily in connection with Jeff) will certainly influence children's inferences based on trait information. If you are convinced that the whole world hates you, you will not expect anything else from Jeff and maybe even go as far as to ignore his trait information altogether. In this study we would like to establish possible differences between popular and rejected children in the way they value trait information about their interaction partners.

The social information processing model (Crick and Dodge, 1994; Lemerise and Arsenio, 2000) provides a general framework for how emotional and cognitive processes can be integrated into models of social competence. This model distinguishes six consecutive steps: 1. encoding of cues, 2. interpretation of cues, 3. clarifications of goals, 4. response access or construction, 5. response decision, and 6. behaviour enactment (including all possible feed-back loops). It seems plausible to assume differences between popular and rejected children with respect to each of these elements, but in this study we want to focus on the possibility of an early discrepancy during the first two steps of this process (which will of course affect the later steps). Crick and Dodge (1994) state that children enter a social situation with past experiences and biologically determined capabilities, which they may access during the encounter. We cannot rule out that innate capabilities of rejected children are different from popular children, but we can be sure that their past experiences differ: many experiences that rejected children have with peers are negative (Bagwell *et al*., 1998). Crick and Ladd (1993) suggest that the process of encoding and interpreting cues can qualitatively or quantitatively change a person's pre-existing emotions. This is an important consideration from the perspective of emotion regulation (Meerum *et al*., 1989). However, when we are interested in the basis of systematic encoding and interpretation differences, it is more important to realize that this influence is also reciprocal: emotions systematically bias perception (Magai and McFadden, 1995; Oatley and Jenkins, 1996). Crick and Ladd's 'pre-existing emotions' automatically shape one's interpretations, and only when children become aware of this mechanism, can they try to correct the impact of an emotional bias (Meerum Terwogt, 1986).

What dominant emotions that might affect their information processing are to be expected in rejected children? It is known that peers are a source of stress and anxiety for them (Villanueva *et al*., 2000). Additionally, we also know that their behaviour to peers is much more aggressive and revengeful than in popular children (Arsenio *et al*., 2000; Dodge, 1980; Ladd and Price, 1993; Pellegrini, 1988), which suggests an anger component. Based on this combination of fear and anger, it could be assumed that—in a more or less ambiguous social situation—rejected children show a relatively strong tendency to interpret the situation as threatening and attribute hostile intentions to their interaction partner (Crick and Dodge, 1994; Vasey *et al*., 1995).

One's perception of a situation depends on the actual characteristics of the situation and one's subjective encoding and interpretation. Lemarise and Arsenio (2000) pointed out that the affective cues displayed by the interaction partner can be a very important characteristic of the situation, which has to be added to the social information processing model. They can reveal a lot about that person's intentions. For example, provocateurs' anger cues in the context of ambiguous provocation facilitate hostile attributions (Dodge and Somberg, 1987). However, some children, e.g. children with a conduct disorder (Casey, 1996), are hampered by the fact that they have difficulty in reading their own and others' affective signals. Rejected children are also found to have problems in reading other people's affective cues (Gnepp, 1989; Keane and Parrish, 1992). For example Keane and Parrish found that rejected children's intention attributions were less affected by the protagonist's emotional state (happy or mad) than popular children's attributions. This might be caused by a basic dysfunction. Alternatively, their failure to encode other people's emotions could also be a direct consequence of their own dominant emotions. Anger (as well as fear) seems to promote a self oriented focus of attention (Barnett *et al*., 1979), which may prevent children from fully attending to other people's emotional signals.

More generalized affective information is likely to work in the same way. Being teased by a person whom you think is your friend is different from being teased by 'a nasty person' or a known enemy. Hostile intentions are normally not immediately assumed from a friend or somebody introduced to you as a 'nice person'. From an experimental point of view, the advantage of this kind of information is that it can be presented explicitly, so that we do not have to rely on children's ability to derive the information spontaneously from the situation.

In the present study we included children with a different sociometric status, and presented them with a number of ambiguous two-person interaction vignettes followed by the open question: what are the intentions of *X*. In order to establish the impact of trait information on these evaluations, we created two parallel versions of the same vignettes: in one vignette *X* was explicitly attributed with a positive trait and in the other vignette with a negative one. It was expected that rejected children would make less—or less consistent—use of this information (Gnepp, 1989; Keane and Parrish, 1992). Additionally, the emotional makeup of rejected children can be expected to make them more vulnerable to a negative bias, which could cause them to pay more attention to negative than to positive trait information.

METHOD

Participants

In this study, we first obtained sociometric data for a total sample of 265 children from 11 different classes derived from two schools, located in middle and low socio-economic neighbourhoods in a Spanish city of average size. Measurement of the children's *sociometric status* and their *social behaviour assessment* (see Material section) was carried out with the complete group.

Second, the sociometric procedure was used to select three groups of popular, rejected and average children (see Material section). From this, 99 children (58 boys and 41 girls, mean age 6-1, SD 6 months, range 5-0 to 7-1) were assigned to one of three sociometric categories: 29 popular; 35 rejected; and 35 average children. The latter were chosen randomly from a larger sample of average

children ($n = 215$). The proportion of boys and girls was equally divided among the three sociometric groups ($\chi^2 = 1.47, p \leqslant 0.479$).

Materials

Sociometric Status

In order to identify rejected, average and popular children, we applied the frequently used nomination method, which was designed by Peery (1979) and validated by Coie *et al*. (1982). Children were asked to name an unlimited number of classmates with whom they like to play most and with whom they like to play least. The total number of nominations each child received as being liked most (positive) or liked least (negative) was counted. Within each class, children were identified who received scores in the upper 5% of the positive nominations or the upper 5% of the negative nominations. Children who received the most positive nominations (upper 5%) made up for the popular group; children who received the most negative nominations (upper 5%) made up for the rejected group. Children with a positive score that was higher than their negative score—although insignificant—were identified as average.

Social Behaviour Assessment

The procedure to identify sociometric status was translated from English to Spanish. Although this procedure is very straightforward and already validated in English, we still felt it would strengthen the design to gain additional information on its validity. Therefore, the Pupil Evaluation Inventory was given (PEI, Pekarik *et al*., 1976). Presented with a 'Guess who' questionnaire, children were asked to nominate one child who fitted best a specific behavioural description. The total PEI consisted of 17 descriptions and has a factorial structure of three different validated factors: (i) *Aggression* (9 items), which includes disruptive behaviour, attention-seeking behaviour and physical and verbal aggression ('Starts fights'); (ii) *Social withdrawal* (5 items), which includes items such as 'Someone who is often left out'; and (iii) *Pro-social behaviour* (3 items), which includes social competent behaviour and characteristics that are associated with popularity ('Liked by everyone'). Total scores per factor were obtained by summing children's scores on the items that composed each factor.

Intention Attribution

The material to access the extent to which children from different groups (rejected, average or popular) use trait information to derive other children's intentions, consisted of six stories. Each story described an activity performed by child-1. A second child then entered the scene, approaching child-1. In three stories, negative trait information was given about this second child; in three stories this trait information was positive. Positive and negative trait information was reversed over stories and over participants, using a Latin square design. Participants were then asked for child-2's intentions: 'Why does child-2 walk up to child-1?'

An example of a story in the positive trait condition is:

> John is playing with some blocks. He is building a very high tower, as high as he can. Another boy walks up to the tower. *The other boy is often patient and nice*. Why does the other boy walk up to the tower?

In the negative trait condition, the sentence in Italics was replaced by:

The other boy is often bossy.

Children's responses were judged by two independent raters as attributing negative, positive or neutral intentions to child-2 in his or her relationship towards child-1. An example of a positive intention is 'because he likes the other child and he wants to play with him', and a negative intention is 'because he wants to hit him'. Answers that were subject to misinterpretation, for example 'because he wants to play', that left unexplained whether the child had positive or negative intentions towards child-1, were coded as neutral. The Kappa coefficient is 0.98, which indicates a good inter-rater reliability. Disagreements were resolved by discussion with a third rater.

PROCEDURE

Firstly, sociometric data and social behaviour assessments were obtained for all 265 children in one session of approximately 1 h/class. Instructions were given per class, and children were assured at the beginning of this session that their information would be kept strictly confidential. Children were presented with the PEI questionnaire, followed by the sociometric questionnaire.

Secondly, to obtain the intention attribution data, all 99 selected participants (popular, average and rejected) were taken individually from their group to a separate room and tested in one session of approximately 15 minutes.

RESULTS

Table 1 shows children's mean *z*-scores on each PEI factor as a function of Group. It can be seen that popular children were judged most pro-social, whereas rejected children were rated more aggressive and withdrawn. Analysis of variance for each factor between the three groups confirmed these observations (Pro-social: $F_{(2.97)} = 29.22$, $p \leqslant 0.001$; Aggression: $F_{(2.97)} = 12.98, p \leqslant 0.001$; Withdrawn: $F_{(2.97)} = 9.81, p \leqslant 0.001$).

For the analysis of children's intention attributions, we carried out analyses of variance (ANOVA) with Group (popular, average or rejected) and gender as between-subjects variables and Trait Information (positive or negative) as a within-subjects variable. The dependent variable was the intention attribution. Children were presented with a total of six vignettes. In the positive trait

Table 1. Z-scores on three PEI factors as a function of group

	Popular	Average	Rejected
Prosocial behaviour	0.81 (1.13)	−0.23 (0.52)	−0.54 (0.41)
Social withdrawal	−0.33 (0.42)	−0.11 (0.85)	0.64 (1.26)
Aggression	−0.02 (1.01)	−0.21 (0.57)	0.98 (1.36)

condition (three vignettes), children received a score of 0 for a negative intention attribution, a score of 1 for a neutral intention attribution; and a score of 2 for a positive intention attribution. This scoring was reversed in the negative trait condition. Thus, collapsed over three stories per condition, participants in the positive condition obtained a minimum score of zero when they attributed only negative intentions, and a maximum score of 6 when they attributed only positive intentions to child-2 (and vice versa in the negative condition).

Children's intention attributions were analysed by a 3 (Group) $\times$ 2 (Gender) $\times$ 2 (Trait Information) ANOVA, which showed a main effect for Trait Information ($F_{(1.93)} = 22.56, p \leqslant 0.001$). Apparently, the group as a whole was more affected by negative than positive trait information (Mean = 5.31, SD = 1.08 and Mean = 4.28, SD = 1.67, respectively). The analysis of variance also showed a main effect for Group ($F_{(2.93)} = 4.15, p \leqslant 0.019$). Rejected children were less affected by Trait Information in the way we had expected than average and popular children (Mean = 8.83, SD = 2.19; Mean = 9.83, SD = 1.69; and Mean = 10.24, SD = 1.64, respectively). Post-hoc t-tests confirmed a difference between the average and rejected children ($T = 2.14$, df = 68, $p \leqslant 0.018$) and the popular and rejected children ($T = 2.87$, df = 62, $p \leqslant 0.003$), whereas no difference was shown between the average and popular children. No other significant findings were shown.

Children's responses were studied more closely in two ways. Firstly, we wanted to distinguish the extent to which children with a different sociometric status made 'illogical' attributions, meaning that they predicted negative behaviour ('he wants to destroy the tower') in the positive trait condition (maximum score = 3), and positive behaviour in the negative trait condition (maximum score = 3). This was important because the relatively low scores of rejected children could have been mainly due to 'neutral' answers ('he wants to see what is happening'), which are less informative but not necessarily illogical with respect to the trait information. A 3(Group) $\times$ 2(Gender) $\times$ 2(Trait) ANOVA showed a main effect for Group ($F_{(2.93)} = 3.63, p \leqslant 0.030$). It appeared that rejected children made more illogical attributions with respect to the trait information than children from the average or popular group (Mean = 1.03, SD = 1.01; Mean = 0.60, SD = 0.91; Mean = 0.41, SD = 0.57, respectively). This applied to the positive and negative trait condition. Post-hoc t-tests confirmed a difference between the average and the rejected children ($T = 1.86, \mathrm{df} = 68, p \leqslant 0.034$), and between the popular and the rejected children ($T = 2.91, \mathrm{df} = 62, p \leqslant 0.003$). No other significant findings were shown.

Secondly, we looked at the extent to which children spontaneously referred to the trait information in their responses ('he wants to take the book away, because he is bad'). However, no more than 3.5% of all responses contained this kind of reference, and this was equally distributed over the three sociometric groups. We also noted no difference between the spontaneous trait references within the positive and negative trait condition.

DISCUSSION

The findings of this study clearly show that rejected children are less affected by trait information when predicting future actions than popular children and children with an average sociometric status within their peer-group. This finding is consistent with other studies. For example, Keane and Parrish (1992) showed that rejected children were less influenced by the affective state of the protagonist

in their intention attributions than their popular peers. Also Gnepp (1989) found that sociometric status and the ability to make—what she called—'personalized inferences' about protagonists' mental states were positively correlated. Firstly, it can be concluded that rejected children seem to make less use of relevant personal information than non-rejected children. Consistent with other studies, no differences between boys or girls were found (Gnepp, 1989; Keane and Parrish, 1992).

Even though children from all sociometric status groups applied their knowledge about the protagonists' traits more often in cases of negative trait information, we did not find more hostile attributions among rejected children, as is sometimes shown in other studies (Dodge *et al*., 1984; Keane *et al*., 1990; Villanueva *et al*., 2000). Instead, rejected children made more attributions that were opposite to the trait information in both conditions. In other words, they attributed more hostile intentions to a child for whom they had been given positive trait information but, they also attributed friendly cooperative intentions to children for whom negative trait information had been given.

Firstly we want to discuss the salience of the negative trait information over the positive information, which was evident for the whole sample, regardless of the children's sociometric status. It seems plausible to interpret this difference in the same way as other asymmetries, for example the phenomenon that people find it easier to justify negative feelings than positive feelings (Taylor, 1991). Asymmetries like this can be explained from a Darwinian perspective, which states that negative—as opposed to positive—affective information implies immediate danger. Consequently, one cannot afford to ignore this type of information but should react straight away (e.g. Frijda, 1986). Also, it is more urgent in daily life to detect malevolent intentions than friendly ones, in order to anticipate and prevent harmful outcomes.

Secondly, the fact that rejected children were less affected than their non-rejected peers by relevant personal information in their expectations about others' future behaviour, can be explained in different ways. One possibility is that rejected children have a general lag in their social–emotional understanding. There are several empirical indications that point to an immature social reasoning and understanding of social rules. For example, rejected children are known to be less aware of causes of social success and failure, use less profound arguments to explain social failure, and have less knowledge about how to make friends (Earn and Sobol, 1990; Gottman *et al*., 1975). Possibly, the rejected children in our experiment ignored the given trait information because they simply lack the ability to deduce useful information from it and thus, are not yet able to infer most likely future actions from personal information. Consequently, trait information becomes meaningless when asked to reason about someone's intentions. The finding that this group also provides more 'illogical' attributions seems to sustain a conclusion in terms of a general weakness in social reasoning.

Another possibility, which is not exclusive to the first, is that rejected children's daily negative experiences with peers bias their way of dealing with different types of social information. Their negative encounters could cause rejected children to rely less on positive trait information. In the positive condition, peer rejected children not only show an impaired understanding of positive personal information, but they also tend to transform it into negative, hostile intentions. Rejected children might know from their own experience that children who are gentle with everybody else, can still behave nastily towards them. A hostile bias is a classic finding in this population (Dodge *et al*., 1984; Keane *et al*., 1990; Villanueva *et al*., 2000). For example, in Villanueva's 'white lie' task, rejected

children more frequently thought that the protagonist had been twisting the truth, not to save the other child's feelings, but in order to trick him or to be nasty to the other child. In conclusion, instead of an inability to reason from personal information, rejected children in our study might have deliberately ignored positive trait information about other children because the information does not coincide with their usual line of reasoning.

However, when both the positive and the negative information conditions are taken into account, the expected negative bias in rejected children did not appear. If there is indeed a negative bias, it was masked by an opposite tendency in reaction to the negative trait information. The literature takes less notice of the positive bias that appeared in our study. Yet, this tendency to think that people are benevolent, even in the face of negative evidence can also be found in Villanueva's (1999) 'irony' task. Hereby, children were asked to explain a negative, ironic statement (a child responding to another child with: 'Oh yes, I want to play with you when cows can fly'). Rejected children more often judged this type of answer as positive and friendly than did average and popular children. This might again be due to a general lag in their social understanding and ability to reason about social causes. However, rejected children might also be vulnerable to an illusionary bias. Since social encounters are—by definition—stressful to rejected children, ascribing positive intentions may serve as a self-calming coping response (Rossman, 1992). The more unrealistic forms of this coping category—that is, denial-like reactions as 'forget about the bad things' or wishful thinking 'this time it will be better' are typical, not only for young children (Rossmann, 1992) but also for children with low social competence (Kliewer, 1991).

Another possible explanation is that, in the same way as they learned that 'friendly' children are not necessarily pleasant to them, rejected children also observed that the few peers who approach them more amiably, are not judged positively by otters. Instead, their rare allies are usually children with a lower sociometric peer-status, like themselves. Although 39% of rejected children have friends, and 18% of them present a central position in a social network (Gest *et al*., 2001), their social networks are usually smaller and contain mostly younger and less popular children (Ladd, 1983; George and Hartmann, 1996). Consequently, negative trait information provided by outsiders is information that is better ignored for two possible reasons. One reason is that rejected children might not like their friends either, but that they try to avoid loneliness and accept the other person as he or she is. Another reason could be that rejected children sincerely like their friend and disagree with the general opinion.

In summary, this study provides only partial corroboration for the hostile attributions we expected to find among rejected children, since this tendency was flanked by an unrealistic positive bias in reaction to negative trait information. This indicates that rejected children at pre-school age are less mature in their social cognition compared with their non-rejected peers. Rejected children seem to have a poorer grip on how to use personal information in a socially useful way, which can cause them to neglect individual differences and respond inappropriately in social interactions. Unfortunately, this will further enhance their unpopular position within the peer group. This phenomenon could be due to a developmental delay in deductive reasoning, which they will make up for when they grow older. However, our data also suggests that rejected children not only show a developmental lag, but they also apply different strategies. This might be due to their peculiar position within their peer group that has a strong impact on the character of their daily interactions and *vice versa*. Future research should look

further into the question of whether the non-anticipated positive bias is caused by a general developmental delay or by a group specific atypical development.

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